

**Amendments to the Claims:**

The following listing of claims will replace all prior versions of claims in the application:

**Listing of Claims:**

1.. (Currently Amended) A gerotor mechanism for a screw hydraulic machine, said gerotor mechanism comprising

a stator having inner helical teeth made of a elastoplastic material, ~~e.g. of rubber,~~ and

a rotor having outer helical teeth whose number by one tooth is less than that of the stator,

leads of screw lines in the stator and the rotor being proportional to numbers of their teeth,

~~the~~ a rotor axis being shifted with respect to ~~the~~ a stator axis by ~~the~~ an eccentricity value being equal to half of the rotor/stator teeth radial height; ~~characterized in that~~

wherein profiles of the rotor and/or the stator are outlined in ~~the~~ end cross section thereof in the form of ~~the~~ an envelop of ~~the~~ an initial contour of a rack-type tool, which contour is formed by conjugation of circle arcs when said initial contour of the rack-type tool is run without sliding along corresponding tool circles, and

~~the~~ radii of the circle arcs of the initial contour being calculated according to the following expressions:

$$r_i = K [(\pi^2 r_{w1}^2 / 4 E z_1^2) + E] / (K+1) \text{ or}$$

$$r_i = K [(\pi^2 r_{w2}^2 / 4 E z_2^2) + E] / (K + 1),$$

$$r_c = r_i / K,$$

where

$r_i$  is ~~the~~ an initial radius of the rack-type tool profile,

$K = (0.5 \dots 2)$  is a shape coefficient of the initial contour ~~shape coefficient~~,

$r_{w1}, r_{w2}$  are radii of ~~the~~ tool circles of the rotor and the stator, respectively;

$E$  is eccentricity of meshing,

$z_1, z_2$  are numbers of teeth of the stator and the rotor, respectively;

$r_c$  is ~~the~~ conjugated radius of the rack-type tool profile.

2. (Currently Amended) The gerotor mechanism for a screw hydraulic machine according to claim 1, ~~characterized in that the~~ wherein profile of a half of each of the teeth in end cross section of the rotor and/or the stator is defined as ~~the~~ an envelope of the rack-type tool initial contour formed by ~~the~~ a curtailed cycloid equidistance when the rack-type tool initial contour is run without sliding along the corresponding tool circle.

3. (New) A gerotor mechanism according to claim 1, wherein the inner helical teeth of the stator are made of rubber.